Feb. 10, 1931. L. C. EICHNER 1,791,891

HEADLIGHT FOCUSING DEVICE

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Fig. 2.

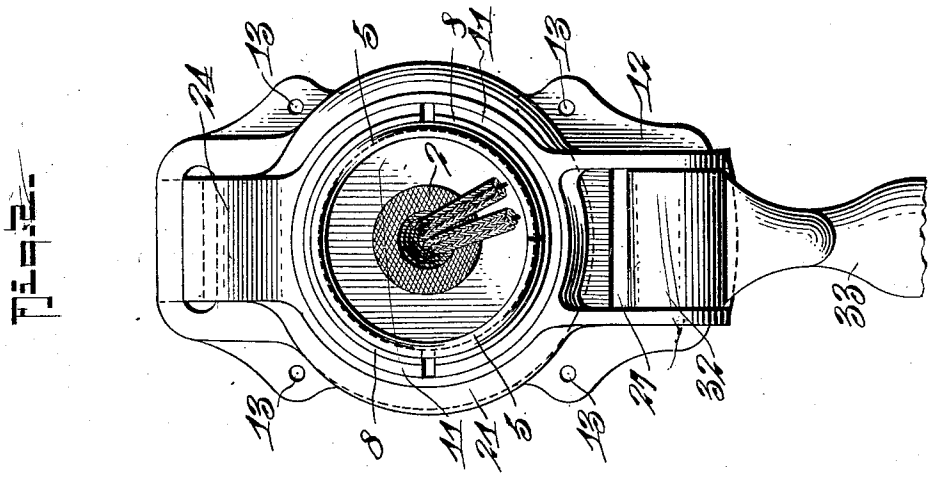
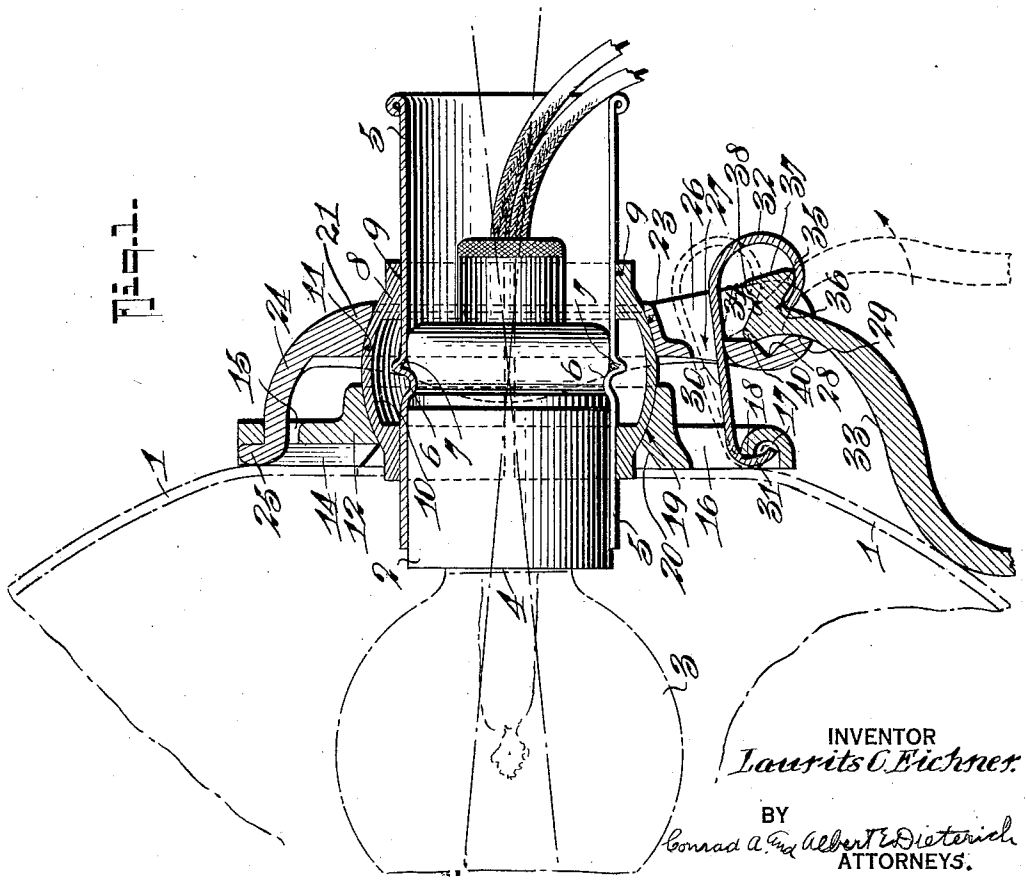


Fig. 1.



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Fig. 3.

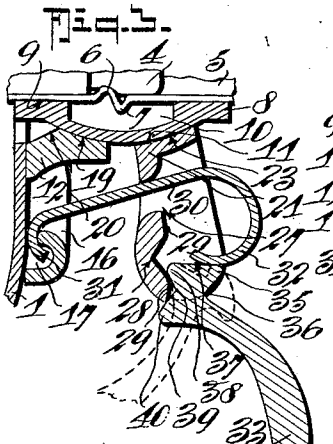


Fig. 4.

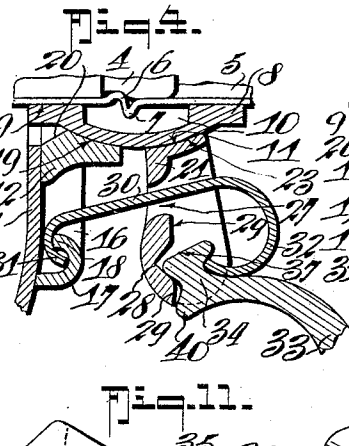


Fig. 5.

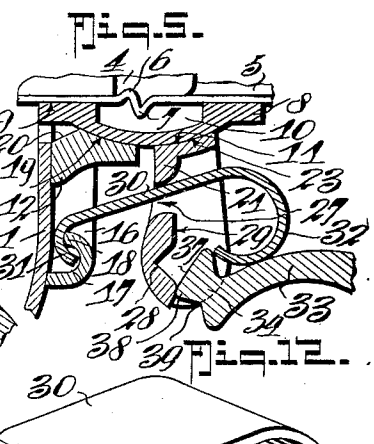


Fig. 11.

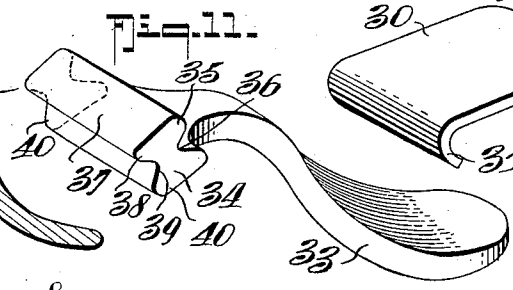


Fig. 12.

Fig. 6.

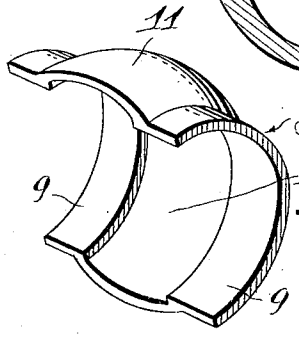


Fig. 9.

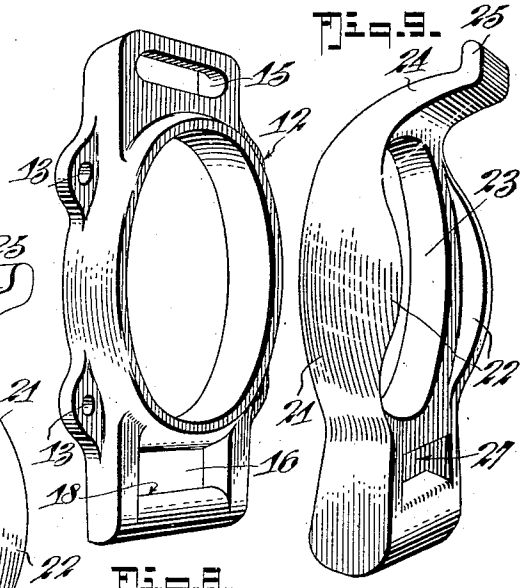


Fig. 7.

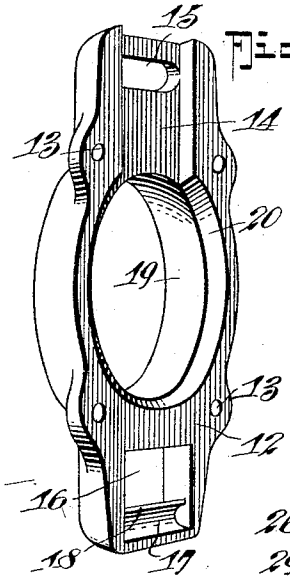


Fig. 10.

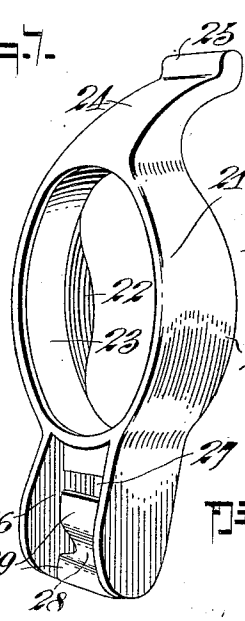


Fig. 8.

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Fig. 14.

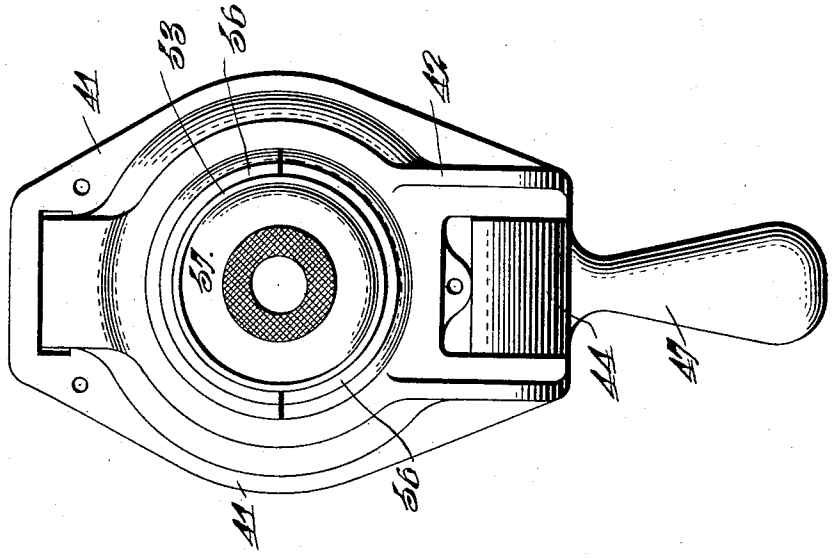
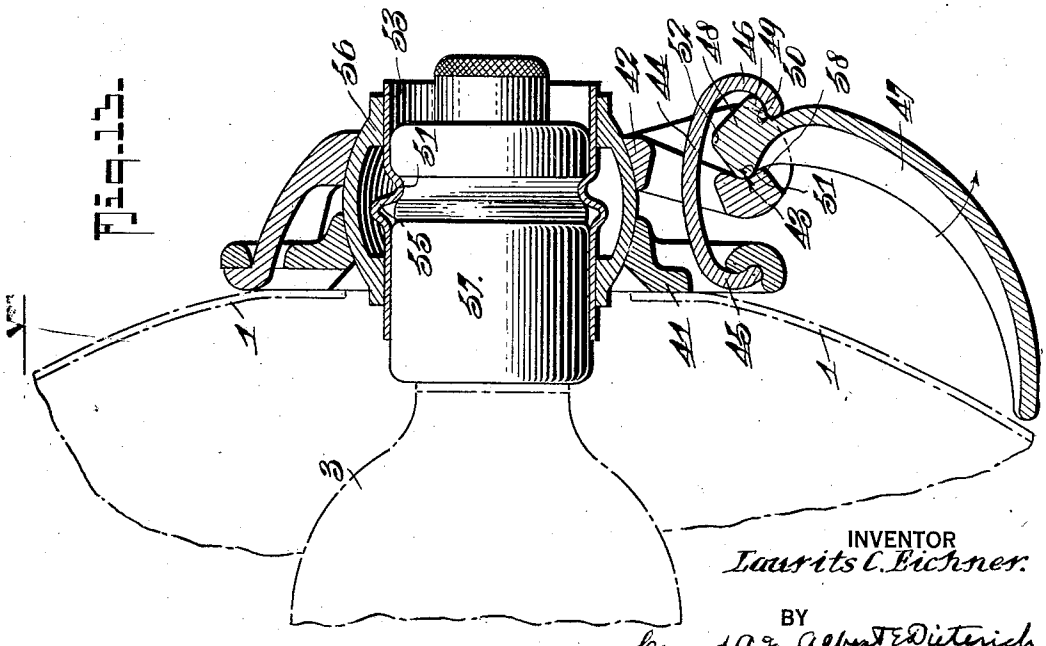


Fig. 15.



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HEADLIGHT FOCUSING DEVICE

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Fig. 15.

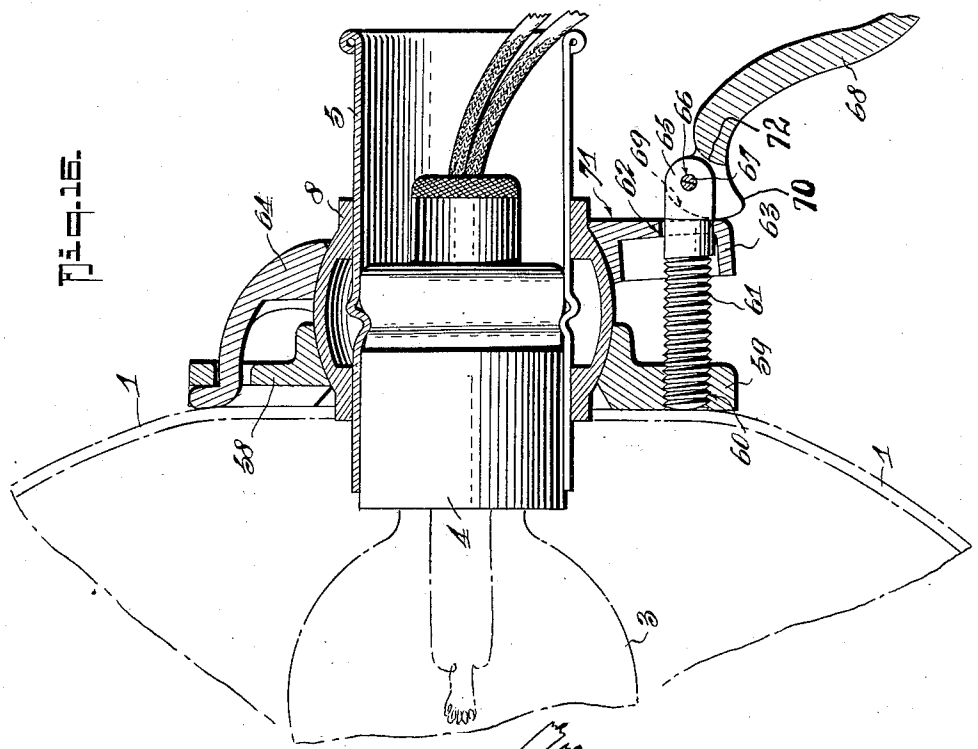
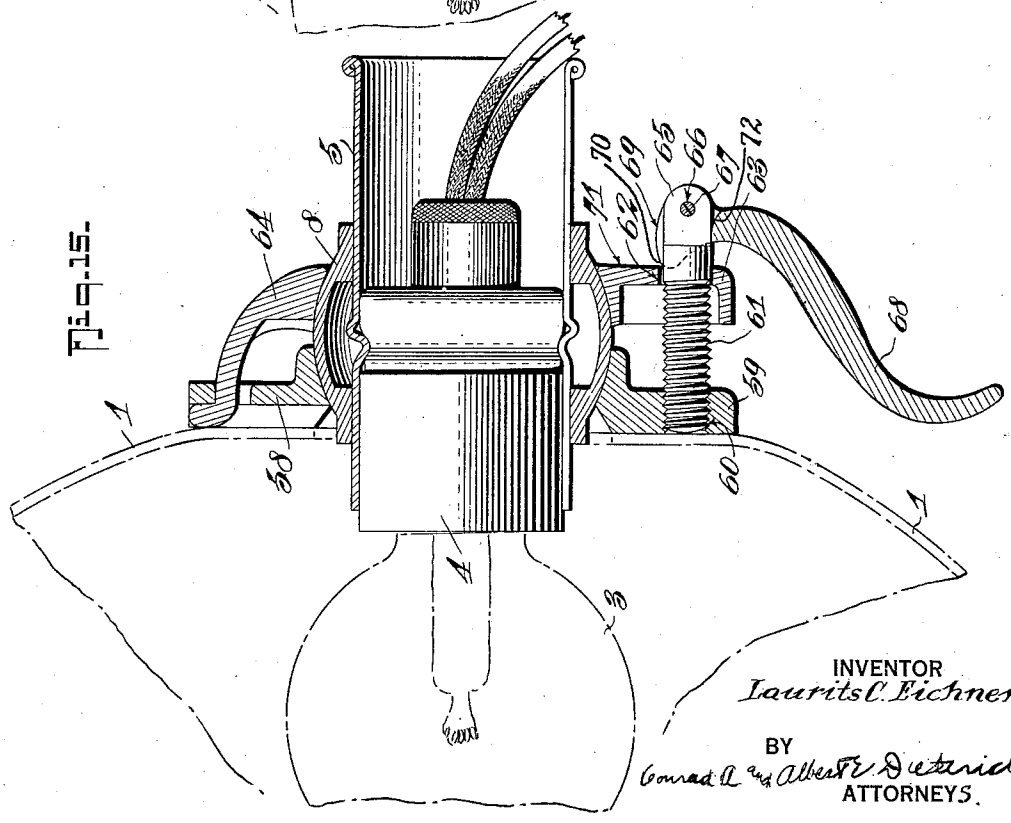


Fig. 15.



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UNITED STATES PATENT OFFICE

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HEADLIGHT FOCUSING DEVICE

Application filed January 6, 1928. Serial No. 244,988.

My invention relates especially to electric headlights, lamps, lanterns, etc. having reflectors and it has for its object more particularly to provide a device for holding the bulb socket in such a manner that the bulb can be moved in all directions for the purpose of adjusting the filament to the focus of the reflector and hold the socket with the bulb securely in its adjusted position.

Further, the invention has for its object to provide means for holding the bulb-receiving socket in a sleeve carried within a sectional bushing that constitutes one element of a universal joint, the other element of which comprises a pair of clamping bodies adapted simultaneously to hold the sectional bushing in gripping relation to said sleeve and in turn cause said sleeve to hold said socket, all with retaining friction, so that when the clamping members are held together with pressure, the socket and bulb will be held immovable in whatever position they may be placed.

Further, it is an object of the invention to provide a device of the character stated, of a very simple construction, one whose parts are not difficult to manufacture and one which can readily be attached to any of the usual types of reflectors in which the reflector has an opening for the bulb base to pass through into a socket.

Again it is an object of the invention to provide a device for the purpose stated, the parts of which can quickly be assembled and disassembled at will.

Further, it is an object to provide a device for the purpose stated of parts which are held together in the proper relation, one to another, by interlocking elements.

Further, said invention has for its object to provide a device composed of a base plate or supporting member that is adapted to be permanently secured to the reflector or some other suitable part of the headlight, a clamp plate hinged to said supporting member, a lever-device connecting the plate in a manner to apply pressure for causing the plates to approach one another, the plates having opposing spherical-segment openings in which is located a ball-like sectional bushing that has a passage through the same in which passage the socket carrying sleeve is held in a manner that will permit longitudinal adjustment of the sleeve in the bushing; the bushing has universal adjustment in the spherical-segment openings in the supporting and clamping plates when the lever device is operating to release the clamping pressure.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends, my invention consists in the novel details of construction and in the combination, connection and arrangement of parts, hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings, showing illustrative embodiments of the invention,

Figure 1 is a vertical longitudinal section of my invention, the parts being shown in the clamped or secured position in full lines and in the released position in dotted lines, the reflector and bulb being indicated by dot and dash lines.

Fig. 2 is a rear elevation of the invention.

Fig. 3 is a detail vertical longitudinal section of a portion of the invention illustrating the position of the lever when it is about to be assembled with the spring and clamping plate.

Fig. 4 is a view similar to Fig. 3 showing the lever in its assembled or connected position.

Fig. 5 is a view similar to Figures 3 and 4 showing the manner of disconnecting the lever.

Fig. 6 is a detail perspective view of one of the bushing sections.

Figs. 7 and 8 are detail perspective views of the base plate or supporting member.

Figs. 9 and 10 are detail perspective views of the clamping plate.

Fig. 11 is a detail perspective view of the lever.

Fig. 12 is a detail perspective view of the clamping spring.

Fig. 13 is a vertical longitudinal section showing a slight modification of the invention.

Fig. 14 is a front elevation of the parts shown in Fig. 13.

Fig. 15 is a vertical longitudinal section of another embodiment of the invention, the parts being shown in the clamped or secured position.

Fig. 16 is a view like Fig. 15 with the parts in the released position.

Referring now to Figure 1 of the drawings, 1 represents the reflector of an electric headlight, lamp, etc., 2 the socket for the bulb base, 3 the bulb and 4 the base of the bulb, all of which may be of the usual construction and per se are not of my present invention.

My present invention comprises a sleeve 5, preferably split as shown in Figures 1 and 2, having an inturned rib 6 to enter a corresponding groove in the socket 2 and also having an outwardly turned portion 7 that constitutes an annular flange to serve as a stop and limit the inward and outward adjustment of the sleeve and the parts which it carries.

The sleeve 5 is mounted in the cylindrical passage 9 of a sectional bushing 8. The bushing 8 has an internal annular groove or recess 10 for the reception of the stop flange 7. It also has an outer spherical surface 11 to fit the spherical-segment walls 19 and 23 respectively surrounding the openings or passages through the supporting member 12 and the clamping member 21 respectively.

The base plate or supporting member 12 has suitably located apertures 13 for the reception of rivets, bolts, screws or other suitable fasteners (not shown), by means of which it may be mounted on the reflector 1 or some other suitable part of the headlight, lamp, etc. The member 12 is provided with a flared front 20 at the opening through the same to permit adjustment of the sleeve as will presently more clearly appear.

The member 12 is provided with a recess or vertical groove 14 in its front face for the reception of the end 25 of the finger 24 hereinafter referred to, the finger 24 passing through the slot 15 provided therefor in the member 12. Another slot 16 is provided in the member 12 for the passage of the clamping spring 30, the smaller hook end 31 of which engages over the edges 18 of the recessed portion 17.

A clamp member 21 cooperates with the base member 12 and with the spring 30 and a cam lever 33 to effect the desired and required gripping action for holding the bushing 8, sleeve 5 and socket 2 rigidly in whatever position they have been placed. This clamp member 21 may have side wings 22 to assist in steadying it with respect to the member 12. The finger 24 with its hook end 25 passes through the aperture 15 and engages hingedly with the base member 12.

The clamp member 21 has one end recessed as at 26 and is provided with a slot 27. It also has a groove 28 and flat walls 29 in which the groove is located for cooperation with the cam head 34 of the lever 33. The spring member 30 is passed through the slot 27 and has its larger hook end 32 arranged to cooperate with the lever 33 and its cam head 34.

By reference to Figures 1, 3, 4 and 5, it will be observed that the lever 33 has a head 34 which is provided with projections 35, 38 and 40 respectively, arranged in triangular formation, and recesses 36 and 39. The recess 36 receives the edge of the spring and 32 at all times while the parts are in the assembled relation (Figures 1 and 4.) The projections 35 and 38 are joined by an approximately flat surface 37.

The projections 38 and 40 cooperate with the groove 28 and surfaces 29 of the clamp member 21 as will now be explained. Assume the parts to be positioned as shown in full lines in Figure 1 (which is the holding or secure position of the parts) and it is desired to release the clamping force so that the position of the bulb may be adjusted, the operator moves the lever 33 from the full line position in Figure 1 to that indicated by dotted lines. During this movement the projection 40 will slip into the groove 28 where it will remain and be held against dropping out. This movement releases the tension of the spring 30 sufficiently to overcome the retaining frictional grip on the parts 8 and 5 and thus permit the sleeve 5 to be moved in a universal manner for the purpose stated.

Should it be desired to disconnect the lever 33 entirely the lever is moved further in the direction of the arrow in Figure 1 until it asumes the position shown in Figure 5. During the movement of the lever from the dotted line position shown in Figure 1 to the position shown in Figure 5, the projection 40 will slip out of the groove 28, the projection 38 will in turn slip into the groove 28 (Figure 4) and finally slip out again (see Figure 5) thereby releasing the lever 33 so that it may be conveniently removed. After thus removing the lever it becomes a simple matter to remove the spring 30 by unhooking its end 31 from the edge 18 and drawing the spring through the slot 27. The other parts of the device can easily be separated one from another.

In order to restore the lever to working engagement with its cooperating elements, it is placed as shown in full lines in Figure 3

and moved from left to right to the position shown in Figure 4. During this movement the projection 38 will act as a fulcrum and slip into the groove 28, while the spring 30 will be retarded by engagement with the upper wall of the slot 27 until the end 32 slips over the projection 35 into the recess 36 (see Figure 4).

Should it be found desirable, the lever may be brought into cooperative relation to the other parts by first placing it as shown in dotted lines in Figure 3, i. e., with its projection 40 in line with the groove 28 It may be moved in the direction of the dotted arrow until it reaches a position shown in dotted lines in Figure 1.

In order to apply the securing and clamping force the lever is moved to the full-lined position of Figure 1.

In Figures 13 and 14 I have illustrated a slight modification of the form of the parts. In this embodiment of my invention the supporting member 41 is of substantially the same construction as the member 12. The clamp member 42 and the bushing 56 are of substantially the same construction as the members 21 and 8 respectively of the embodiment hereinbefore described.

The sleeve 53, however, may be continuous and secured tightly to the socket 57 by rolling the rib 51 into the groove of the socket, such sleeve also having a rib 55 corresponding in purpose and function to the rib 7.

The clamp member 42 has a recessed end which is provided with a groove 43 corresponding to the groove 28 in the first described embodiment shown.

The spring 44 in the embodiment shown in Figures 13 and 14 may be shaped as indicated. Its end 45 hooks into the recess in the member 41 and its end 46 hooks into the recess 50 of the lever 47 whose cam head 48 is of substantially triangular form with approximately plane surfaces between the respective projections 49, 51 and 52. The projections 51 and 52 cooperate with the groove 43.

Assume the parts to be positioned as shown in full lines in Figure 13, they will be in the clamping or holding relation. Upon moving the lever 47 in the direction of the arrow in Figure 13 clamping pressure will be released when the flat surface between projections 51 and 52 lies against the face of the member 42 above the groove 43, the lower lip 58 serving, with spring 44, to prevent the lever from dropping. Continued movement of the lever 47 in the same direction will bring the projection 52 into the groove 43, and still further movement of the lever in the same direction will release it from the groove 43 and spring 44 so that the parts may be dis-assembled as desired.

In the embodiment of the invention shown in Figs. 15 and 16, the base plate 58 has an ear 59 which is bored and tapped at 60 to receive a screw or bolt 61, the latter passing freely through a hole 62 in the ear 63 of the clamp member 64.

The bolt 61 has a head 65 which is bored at 66 to receive the cotter pin 67, or other suitable fulcrum by which the operating lever 68 is pivotally secured to the head 65.

The operating lever 68, in the present embodiment of my invention, has a bifurcated cam-head 69 to engage with the clamp member 64 and press the member 64 toward the plate 58, the heel 70 of the cam being adapted to pass the dead center in order to act as a toggle lock.

Further, the face 71 of the clamp member's ear 63, against which the cam-lever operates, may be inclined somewhat to assist in effecting a tight clamping action.

The movement of the lever 68 toward the locked position is limited by engagement of the portions 72 with the head 65 of the bolt 61 as best shown in Fig. 15.

As to the other parts of the device the construction is the same as that disclosed in the preceding embodiments.

Attention is called to the fact that in all of the embodiments of my invention by reason of the fact that the sleeve 5 is split and the members 8 are in halves, when the clamping action occurs these members will be constricted or squeezed together and thus effect a tight gripping on the socket 2 which carries the bulb and ensures holding the socket rigidly in the position to which it may have been adjusted.

It will be quite obvious to those skilled in the art that other modifications of the invention can readily be made so as to adapt the same to any kind of headlight, lantern, lamp, etc. in which it may be used to advantage.

Having thus described my said invention, what I claim and desire to secure by Letters Patent is:

1. In a device of the character described, a socket having an annular groove, a sleeve to hold said socket and having a bead to engage in said groove, a bushing in which said sleeve has longitudinal and rotational movement, said bushing having a chamber and said sleeve having a bead located within said chamber and serving to limit movement of said sleeve in said bushing and along its axis in both directions, a support, and a clamping means cooperating with said support to hold said sleeve and bushing immovable when said clamping means is in one position and to release the same for adjustment when said clamping means is in another position.

2. In a device of the class described, a sleeve to hold a socket; a socket held within said sleeve; a support having a globular-segment seat, a slotted and grooved projection and an ear diametrically opposite said projection; a globular bushing to fit said

seat and adapted to receive said sleeve; a movable clamping member having a finger hooked through said slotted projection to lie in the groove thereof, thereby hingedly and detachably engaging said support and clamping member, said movable clamping member having a globular-segment seat for said bushing; and a lever operating clamping connection between said ear and said movable clamping member.

Signed at the city of New York, in the county of New York and State of New York, this 30th day of December, 1927.

LAURITS C. EICHNER.